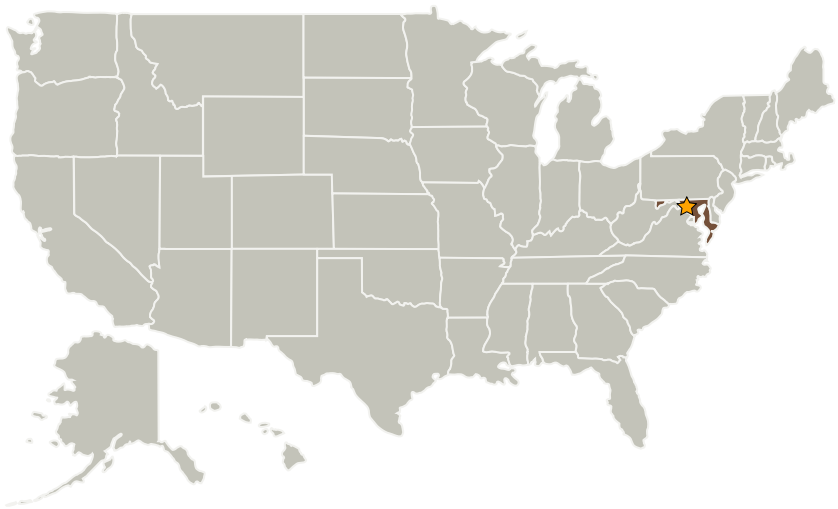
BETTII: The Balloon Experimental Twin Telescope for Infrared Interferometry (Phase 2a) - High Angular Resolution Astronomy at Far-Infrared Wavelengths

Completed Technology Project (2016 - 2019)

Project Introduction

The Balloon Experimental Twin Telescope for Infrared Interferometry (BETTII) is an eight-meter baseline far-infrared interferometer to fly on a high altitude balloon. The combination of the long baseline with a double-Fourier instrument allows BETTII to simultaneously gain both spatial and spectral information; BETTII is designed for spatially-resolved spectroscopy. The unique data obtained with BETTII will be valuable for understanding how stars form within dense clusters, by isolating individual objects that are unresolved by previous space telescopes and my measuring their spectral energy distributions. BETTII will be also used in future flights to understand the processes in the cores of Active Galactic Nuclei. In addition to these scientific goals, BETTII serves as a major step towards achieving the vision of space-based interferometry. BETTII was first funded through the 2010 APRA program; last year, the proposal also fared well in the APRA review, but for programmatic reasons was only awarded one year of funding. With the current funding, we will complete the BETTII experiment and conduct a Commissioning Flight in August/September 2016. The effort proposed includes full analysis of data from the Commissioning Flight, which will help us determine the technical and scientific capabilities of the experiment. It also includes two science flights, one in each 2017 and 2018, with full data analysis being completed in 2019.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Organizational Responsibility

Responsible Mission Directorate:

Science Mission Directorate (SMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Astrophysics Research and Analysis

Project Management

Program Director:

Michael A Garcia

Program Manager:

Dominic J Benford

Principal Investigator:

Stephen A Rinehart

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Completed Technology Project (2016 - 2019)

Project Management *(cont.)*

Co-Investigators:

Enzo Pascale
John C Mather
Roser Juanola-parramon
Robert Silverberg
Elmer H Sharp
Keith M Jahoda
Lee G Mundy
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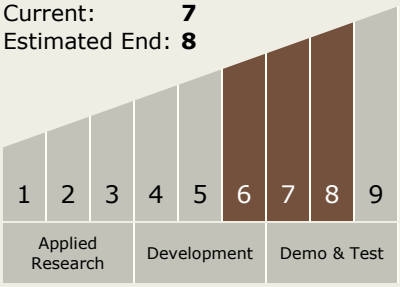
Arnab Dhabal

Technology Maturity (TRL)

Start: **6**
Current: **7**
Estimated End: **8**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.2 Observatories
    - TX08.2.1 Mirror Systems

Target Destination

Outside the Solar System